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July 8, 1999

HAND DELIVERED
Ms. Magalie Salas, Secretary
Federal Communications Commission
445 12th Street SW
Room TW-B204
Washington DC 20554

Re: Amendment of Part 18 of the Commission's Rules to Update Regulations for RF Lighting Devices, ET Docket No. 98-42 — *Ex Parte* Communication

Dear Ms. Salas:

Pursuant to Section 1.1206(b)(1) of the Commission's Rules, I enclose two copies of correspondence for inclusion in the above-referenced docket.

Kindly date-stamp and return the extra copy of this letter.

If there are any questions about this filing, please call me at the number above.

Respectfully submitted,

Mitchell Lazarus
Counsel for Harris Corporation,
Symbol Technologies, Inc., and
3Com Corporation

ML:deb

No. of Copies rec'd 0+1
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cc: David Jatlow, Esquire, Counsel for Bluetooth Promoters
Ray Martino, Symbol Technologies, Inc.
Carlos Rios, 3Com Corporation
Steve Sharkey, AirTouch Communications, Inc.
Larry Solomon, Esquire, Counsel for Metricom, Inc.,
William D. Wallace, Esquire, Counsel for Globalstar, L.P.
Jim Zyren, Harris Corporation
Terry Mahn, Esquire, Counsel for Fusion Lighting
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July 8, 1999

BY TELECOPIER AND FIRST CLASS MAIL

Terry G. Mahn, Esquire
Fish & Richardson P.C.
601 Thirteenth Street, NW
Washington, DC 20005

Dear Terry:

Thank you for your letter of June 25. We share your regret that the meeting scheduled for that day was canceled. Your letter inaccurately suggests, however, that the Part 15/MSS parties instigated the cancellation. In fact, as my email of June 21 noted, representatives of all seven Part 15/MSS entities, including the three that have not signed off on our most recent proposal, were prepared to meet with you and your client. You indicated, however, that Fusion did not wish to meet until the three undecided parties have reached a decision.

Your letter included five questions, to which we respond as follows:

1. ***Are the proposed limits peak or average limits? Precisely how would emissions be measured? For your reference, we enclose another copy of the memo from the FCC that states the accepted protocol.***

As indicated in paragraph 4.0 of our June 21 proposal, the proposed limits are average limits. The Part 15/MSS parties will accept any method of measurement satisfactory to the FCC, including that described in the memo of March 5, 1999, from Raymond LaForge of the FCC to Michael Ury.

2. ***Please identify and state the availability, cost and operating characteristics of the magnetrons that you believe Fusion can use.***

None of the Part 15/MSS parties manufactures magnetrons or otherwise holds itself out as expert in that technology. As a general engineering matter, we understand the operating frequency of a magnetron is determined primarily by the cavity geometry. The 1 percent shift of center frequency that

we propose, from 2450 to 2470 MHz, represents only a slight change in that geometry, so the operating characteristics of magnetrons at the two frequencies should be approximately similar. Likewise, we expect the manufacturing cost of a 2470 MHz magnetron will not differ significantly from a 2450 MHz magnetron, assuming similar production volumes. But we acknowledge there may be less initial demand for 2470 MHz than for 2450 MHz units, which are currently manufactured for applications other than RF lighting, so the 2470 MHz units may be somewhat more expensive at the outset. As our June 21 proposal noted, "The incremental cost of shifting the center frequency can be expected to decline as production volumes increase." We lack the information needed to quantify this relationship.

3. ***Please identify and state the availability, cost and operating characteristics of the DC power supplies that you believe Fusion can use and which you say are "economically feasible."***

DC power supplies are widely available as OEM equipment, or the power supply can be integrated into the product using any of several designs. The Part 15/MSS parties do not have expertise in either Fusion's requirements or DC power supplies generally, and so cannot recommend particular units or designs. Nevertheless, we are confident that Fusion's requirements can be met.

4. ***Is your current position supported by the Part 15 interests that use frequency hopping systems? (As a point of information, multiple lamp installations are the norm and not the exception, and we do not understand why you state that the impact of the newly proposed limits on the frequency hopping systems should be acceptable unless several lighting devices are located close together.)***

The June 21 proposal is supported by Symbol Technologies and Metricom, both of which are world leaders in frequency hopping spread spectrum (FHSS) radio technology.

The referenced text in the June 21 proposal reads, "While the proposed band of higher emission is 20 MHz wide, the actual operating bandwidth of an individual RF light should be less than 1 MHz. Unless several lighting devices were present at one time, the impact on FHSS systems should be modest." The interference impact on frequency hopping spread spectrum systems is modest in installations where single lamps are installed because, as explained in the proposal, the operating frequency of a magnetron is both stable and narrow in terms of occupied bandwidth (less than 1 MHz) when driven by a low ripple (several dB) power supply. With a fixed narrowband interferor operating in the 2.45 GHz ISM band, an FHSS system would lose nominally one channel of 79. The probability of interference from a single RF light would therefore be 1/79. This represents a modest disruption in throughput for an FHSS system.

In instances where multiple lights are installed, the degree of disruption to an FHSS system would depend on the range to each light and the number of channels jammed by the various lights. When several lights are close enough to a receiver to cause interference, more channels may be lost. However, it is statistically unlikely that all 20 MHz of the proposed 2460 - 2480 MHz band would be lost due to interference from RF lights. This situation would require, among other things, at least 20 co-located lights, as in stadium installation. In a limiting worst case with the entire 20 MHz occupied, FHSS systems would lose 20 of 79 channels, or about 25% of capacity. While this would represent a reduction in throughput, it would still permit FHSS systems to operate.

More likely is the case where several RF lights would be used to light up a factory floor, warehouse, or parking lot, in a configuration distributed over a large area (several thousand square feet). The physical distribution of RF lighting in such applications mitigates the interference from multiple devices. In addition, since the center frequency of the magnetron is determined largely by the geometry of the resonant cavities in the device, most devices would be clustered about the proposed center frequency of 2470 MHz. Given the distributed nature of the RF lighting devices and the fact that the probability of all 20 MHz being occupied is statistically low, FHSS systems should be able to operate adequately in the warehouse or factory setting.

(This response was prepared by Jim Zyren of Harris Semiconductor.)

5. ***You have advised us that the Bluetooth Promoters will not be taking a position on the Third Proposal, one way or the other, until sometime during the week ending July 3, 1999. As for the MSS interests, you have also advised us that you have no knowledge as to when, or whether, this group will make any decision on the Third Proposal. What are the reservations of Bluetooth Promoters, Globalstar and AirTouch Communications about your new position?***

Bluetooth Promoters, Globalstar and AirTouch Communications have authorized me to reiterate that they have not completed their review of the June 21 proposal, as supplemented herein, and so have not yet determined whether they have reservations concerning it.

■ ■ ■ ■

We look forward to your response to our most recent proposal. Please do not hesitate to contact me if you have questions in the meantime.

I am authorized to state that the responses in this letter are endorsed by the following entities (except that the response to Question 5 applies only to the parties named in that paragraph):

Harris Corporation
Metricom, Inc.
Symbol Technologies, Inc.
3Com Corporation

As indicated in the response to Question 5, AirTouch Communications, Inc., Bluetooth Promoters (Ericsson, IBM, Intel, Nokia, and Toshiba), and Globalstar, L.P. are still reviewing the June 21 proposal, as supplemented by this letter.

Sincerely,

Mitchell Lazarus
Counsel for Harris Corporation,
Symbol Technologies, Inc., and
3Com Corporation

ML:deb

cc: Office of the Secretary, FCC (two copies)
David Jatlow, Esquire, Counsel for Bluetooth Promoters
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